

Unprecedented mixed-valence Cu(I)/Cu(II) complex derived from *N*-methyl-1,3,5-triaza-7-phosphaadamantane; synthesis, structural features, and magnetic properties.

Autorzy

Alexander M. Kirillov
Małgorzata Filipowicz
Silva M. Fátima. C. Guedes
da
Julia Kłak
Piotr Smoleński
Armando J. L. Pombeiro

Rok wydania

2012

Czasopismo

Organometallics

Numer woluminu

31

Strony

7921-7925

DOI

10.1021/om3005564

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

The unique mixed-valence tetracopper(I/II) complex $[\text{Cu}_4\text{I}_4(\mu\text{-N}_3)_2(\text{N}_3)_4(\mu\text{-PTA-Me})_2(\text{PTA-Me})_2]\cdot 2\text{H}_2\text{O}$ (**1**), composed of the hexaazido dicopper(II) core $\{\text{Cu}_2(\mu\text{-N}_3)_2(\text{N}_3)_4\}^{2-}$ and two copper(I) $\{\text{CuI}_2(\mu\text{-PTA-Me})(\text{PTA-Me})\}^+$ units, has been easily generated by self-assembly in water from copper(II) nitrate, *N*-methyl-1,3,5-triaza-7-phosphaadamantane iodide, $[\text{PTA-Me}]\text{I}$, and sodium azide. It has been characterized by IR, ^1H and $^{31}\text{P}\{\text{H}\}$ NMR, and EPR spectroscopies and elemental and single-crystal X-ray diffraction analyses. Apart from representing the first mixed-valence metal compound bearing PTA or any cage-like aminophosphine derivative, **1** also discloses a rare P,N-coordination mode of PTA-Me ligands, which act, for the first time, as spacers between the Cu(I) and Cu(II) centers. Magnetic susceptibility and EPR studies reveal a ferromagnetic interaction ($2J = +17.1 \text{ cm}^{-1}$) between the Cu(II) atoms through $\mu\text{-1,1}$ -azido ligands.

Adres publiczny

<https://doi.org/10.1021/om3005564>

Strona internetowa wydawcy

<https://www.acs.org/content/acs/en.html>

